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by  
Art. 34

maximising the efficient volatilisation and diffusion of the fragrance in the enclosed volume of the room.

Attempts have been made to provide an electrically heated vapour dispensing apparatus which operates from a portable power supply, such as batteries. However, such apparatus suffer from two main drawbacks. Firstly, they are under-powered such that they have difficulty in heating the fragrance or other volatile substance to the required temperature, as well as heating the volatile substance sufficiently rapidly. Secondly, batteries are not able to volatilise the fragrance for a long enough period to be acceptable to consumers. With many conventional apparatus the operating life of a battery power source would be only a matter of hours.

According to the present invention, there is provided an electrically heated apparatus for dispensing fragrancing materials and other volatile substances to an enclosed volume comprising a container containing a quantity of a volatile substance, heating means, transfer means for transferring said volatile substance towards said heating means and a portable power supply for energising said heating means, characterised in that said heating means comprises a flexible thin film heater.

Embodiments of the present invention will now be described, by way of example only, with reference to the accompanying drawings in which:-

Figure 1 is a schematic cross-sectional view through a first embodiment of electrically heated vapour dispensing apparatus according to the present invention;

Figure 2 is a schematic cross-sectional view through a second embodiment of electrically heated vapour dispensing apparatus according to the present invention;

Figure 3 is a schematic cross-sectional view through a third embodiment of electrically heated vapour dispensing apparatus according to the present invention;

Figure 4 is a schematic cross-sectional view through  
5 a fourth embodiment of electrically heated vapour dispensing apparatus according to the present invention;

Figure 5 is a plan view of a heating means for use in the apparatus of Figure 1 to 4; and

Figure 6 is a cross-sectional view of the heating  
10 means taken on line VI-VI of Figure 5.

Figure 1 shows a first embodiment of electrically heated vapour dispensing apparatus 1 which comprises a housing 2 containing a fragrance reservoir 4, a capillary tube 5, a porous element 6, heating means 7, control  
15 circuitry (not shown) and a portable power supply (not shown).

The housing 2 has a planar base 9 allowing the apparatus 1 to be stood upright on a flat surface. The housing 2 defines an interior 10 of the apparatus 1 in  
20 which the other components of the apparatus 1 are located. At or near an upper end of the housing 2 are provided a number of air holes 3 providing communication between the interior 10 and the surrounding atmosphere. The air holes 3 allow volatilised fragrance to emanate  
25 from the interior 10.

The housing 2 may be formed from a thermoplastic or thermosetting polymeric material which has sufficient heat tolerance such that it is not undesirably softened or melted when the heating means 7 is energised during  
30 normal use of the apparatus 1. Typical examples of known materials which would be suitable include polymers and/or co-polymer resin compositions based on:- nylons,

Claims:

1. An electrically heated apparatus for dispensing  
fragrancing materials and other volatile  
5 substances to an enclosed volume comprising a  
container containing a quantity of a volatile  
substance, heating means, transfer means for  
transferring said volatile substance towards said  
heating means and a portable power supply for  
10 energising said heating means, characterised in  
that said heating means comprises a flexible thin  
film heater.
2. Electrically heated apparatus as claimed in claim  
15 1 wherein said thin film heater comprises a  
laminar of resistive material.
3. Electrically heated apparatus as claimed in claim  
20 2 wherein the resistive material is a polymer  
thick film material or a polymer thin film  
material.
4. Electrically heated apparatus as claimed in claim  
25 2 or claim 3 wherein the resistive material has  
positive temperature coefficient characteristics.
5. Electrically heated apparatus as claimed in any  
of claims 2 to 4 wherein the thin film heater  
comprises a laminate having at least one laminar  
30 of resistive material and at least one laminar of  
insulating material.

6. Electrically heated apparatus as claimed in claim 5 wherein the laminate comprises two insulating laminars attached to opposed surfaces of the resistive material laminar.
- 5 7. Electrically heated apparatus as claimed in any of claims 2 to 6 wherein the resistive material is formed at least partially from resistive ink.
- 10 8. Electrically heated apparatus as claimed in any of claims 2 to 7 wherein the resistive material is formed at least partially from resistive wire.
- 15 9. Electrically heated apparatus as claimed in claim 7 or claim 8 wherein the laminar of resistive material is formed from one or more layers of resistive ink and/or resistive wire each layer having a thickness of between 10 and 1000 microns.
- 20 10. Electrically heated apparatus as claimed in claim 7 or claim 8 wherein the laminar of resistive material is formed from one or more layers of resistive ink and/or resistive wire each layer having a thickness of between 10 and 100 microns.
- 25 11. Electrically heated apparatus as claimed in claim 7 or claim 8 wherein the laminar of resistive material is formed from one or more layers of resistive ink and/or resistive wire each layer having a thickness of between 20 and 50 microns.
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12. Electrically heated apparatus as claimed in any preceding claim wherein the thin film heater has an overall thickness of between 20 and 1000 microns.
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13. Electrically heated apparatus as claimed in any preceding claim wherein the thin film heater has an overall thickness of between 40 and 100 microns.
- 10
14. Electrically heated apparatus as claimed in any preceding claim wherein the portable power supply comprises one or more battery cells.
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15. Electrically heated apparatus as claimed in claim 14 wherein the battery cell or cells are rechargeable.
16. Electrically heated apparatus as claimed in any preceding claim wherein said transfer means comprises a capillary tube.
- 20
17. Electrically heated apparatus as claimed in any of claims 1 to 15 wherein said transfer means comprises a wick or capillary film.
- 25
18. Electrically heated apparatus as claimed in claim 17 wherein said heating means is attached to or held in proximity to said wick or capillary film.

19. Electrically heated apparatus as claimed in claim 18 wherein said heating means is located at least partially within said wick.
- 5 20. Electrically heated apparatus as claimed in claim 19 wherein said wick is cylindrical and said heating means is located in a bore of the cylinder.
- 10 21. Electrically heated apparatus as claimed in claim 18 wherein said heating means is wrapped at least partially around an outer surface of said wick.
- 15 22. Electrically heated apparatus as claimed in any preceding claim further comprising timing means operable to energise said heating means periodically.
- 20 23. Electrically heated apparatus as claimed in claim 22 wherein the periodicity is pre-programmed.
24. Electrically heated apparatus as claimed in claim 22 wherein the periodicity is user defined.
- 25 25. Electrically heated apparatus as claimed in any of claims 22 to 24 wherein each period of energisation is for between 1 second and 5 minutes.
- 30 26. Electrically heated apparatus as claimed in any of claims 22 to 24 wherein each period of

energisation is for between 1 second and 1 minute.

5        27. Electrically heated apparatus as claimed in any  
of claims 22 to 24 wherein each period of  
energisation is for between 1 second and 10  
seconds.

10       28. Electrically heated apparatus as claimed in any  
of claims 22 to 24 wherein each period of  
energisation is for between 1 second and 5  
seconds.

15       29. Electrically heated apparatus as claimed in any  
preceding claim further comprising timing means  
operable to switch said heating means  
periodically from a low power state to a high  
power state.

20       30. Electrically heated apparatus substantially as  
hereinbefore described with reference to or as  
shown in the accompanying drawings.

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